

PENANG'S MANUFACTURING COMPETITIVENESS

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1. INTRODUCTION

The Penang's economy has expanded significantly over the past three decades. The compounded annual growth rate reached 10.8% between 1990 and 1997, which is a massive improvement over the 5.6% rate during 1980-1990 period. Despite the onset of the Asian financial/economic crisis in mid-1997, Penang's GDP is estimated to grow at 8.1% per annum over the period 1991-2000 (Table 1).

Table 1: Penang's GDP Growth Rates

	1970-1980 *	1980-1990 *	1990-1997#	1990-2000 (f)
CAGR	9.7%	5.6%	10.8%	8.1%

Source: Derived from Penang State Government, *Penang Strategic Development Plan, 1991-2000* and SERI.

* based on 1978 prices

based on 1987 prices

A comparison of the GDP growth rates between Penang and its competitors indicates that Penang shares the same growth trend as that of Singapore. Economic growth in both locations peaked in 1994. As in the case of Singapore, Penang's growth tapered off and dipped further in 1998, when it experienced a contraction of 8.5% in 1998 (Table 2 & Figure 1).

However, Singapore does not pose as a major competitor to manufacturing investments as compared to the newly emerging locations like Philippines and China. Although the Philippines' economy has not been expanding as vigorously as Penang's, it has been growing progressively from 0.3% in 1992 to 5.7% in 1996, before dipping to -0.5% in 1998. The other major economy that Penang should be looking out for is China although its economic growth has declined from 14.2% in 1992 to 7.1% in 1999, and is expected to drop further to 6.5% in 2000. The two emerging economies have strong competitive advantages in cheap but skilled labour force.

Table 2: GDP Growth Rates

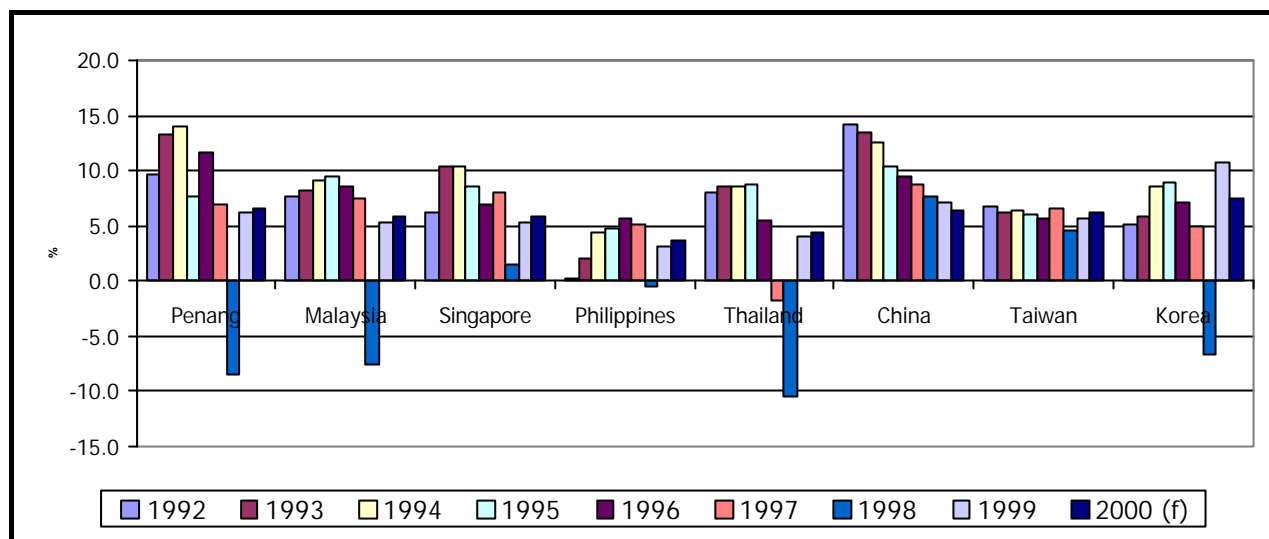
	1992	1993	1994	1995	1996	1997	1998	1999	2000 (f)
Penang	9.7	13.4	14.1	7.8	11.8	7.0	-8.5	6.3	8.1
Malaysia	7.8	8.3	9.2	9.5	8.6	7.5	-7.5	5.4	5.8
Singapore	6.2	10.4	10.5	8.7	6.9	8.0	1.5	5.4	5.9
Philippines	0.3	2.1	4.4	4.8	5.7	5.2	-0.5	3.2	3.8
Thailand	8.1	8.7	8.6	8.8	5.5	-1.8	-10.4	4.1	4.5
China	14.2	13.5	12.6	10.5	9.6	8.8	7.8	7.1	6.5
Taiwan	6.8	6.3	6.5	6.0	5.7	6.7	4.6	5.7	6.3
Korea	5.1	5.8	8.6	8.9	7.1	5.0	-6.7	10.7	7.5

Source: Derived from Asian Development Outlook (ADO) 1998 and 2000, Mid-Term Review of 7th Malaysia Plan (MTR-7MP), Bank Negara Malaysia (BNM) Sanwa Economic Letter, January 2000 Ministry of Trade & Industry, Singapore, (1998), Committee on Singapore's Competitiveness, and SERI

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Figure 1: GDP Growth Rates of Selected Locations



Source: Derived from ADO 1998 & 2000; MTR-7MP; BNM; Sanwa Economic Letter, January 2000; Ministry of Trade & Industry, Singapore (1998), Committee on Singapore's Competitiveness; SERI

2. MANUFACTURING PERFORMANCE

Value Added

Table 3 shows the share of manufacturing GDP in the various economies. It is evident that the manufacturing sector has gained importance over the past 2½ decades in Penang. Similar trend is observed in Thailand, China and Taiwan. While Thailand and China are emerging economies, especially in the manufacturing sector Taiwan has already gained the status of the newly industrialised economy.

Table 3: Share of Manufacturing GDP

	1970	1980	1997
Penang	12.7	41.0	44.4
Malaysia	-	35.8	47.6
Singapore	36.4	38.8	34.3
Philippines	33.7	40.5	35.9
Thailand	25.7	30.1	42.2
China	44.6	51.7	54.9
Taiwan	-	46.0	35.3
Korea	23.8	37.8	43.7

Source: Asian Development Outlook, 1998; Penang Strategic Development Plan 1991-2000; SERI

The data indicates increasing dependency on the manufacturing sector. On the other hand, Singapore, which is considered to have almost similar growth trend with Penang does not seem to depend so much on the manufacturing sector. Furthermore, it should be noted that the manufacturing value added that is compiled by the Malaysian government took into account only purely manufacturing value added. Value added derived from distribution and marketing activities by the manufacturing firms are logically recorded under the services sector. As such, judging from the increasing share of the manufacturing sector in terms of Penang's GDP, a shift in focus should be considered. Although the industrial sector can remain as the main engine of growth of the Penang's economy, it should encompass a wider value chain. This includes value added from purely assembly/manufacture and test activities, logistics/distribution and marketing activities as well as R&D and design activities. By widening the value chain, the share of the manufacturing sector to the total Penang's economy may decline and the share of the services/tertiary sector may increase. This could generate higher value added in the Penang's economy and it does not necessary mean that the manufacturing sector is losing its importance in the Penang economy as it generates multi-

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plier effects to the other sectors of the economy.

Table 4 and Figure 2 compare the growth of manufacturing value added of various locations. A similar trend is observed in the growth of GDP and the growth of manufacturing value added in Penang. The growth of manufacturing value added also peaked in 1994 and tapered off after that. The same trend is also observed in Singapore. As both Penang and Singapore have matching trends in GDP and manufacturing value added growths, it is pertinent to claim that Penang's growth structure is similar to that of Singapore.

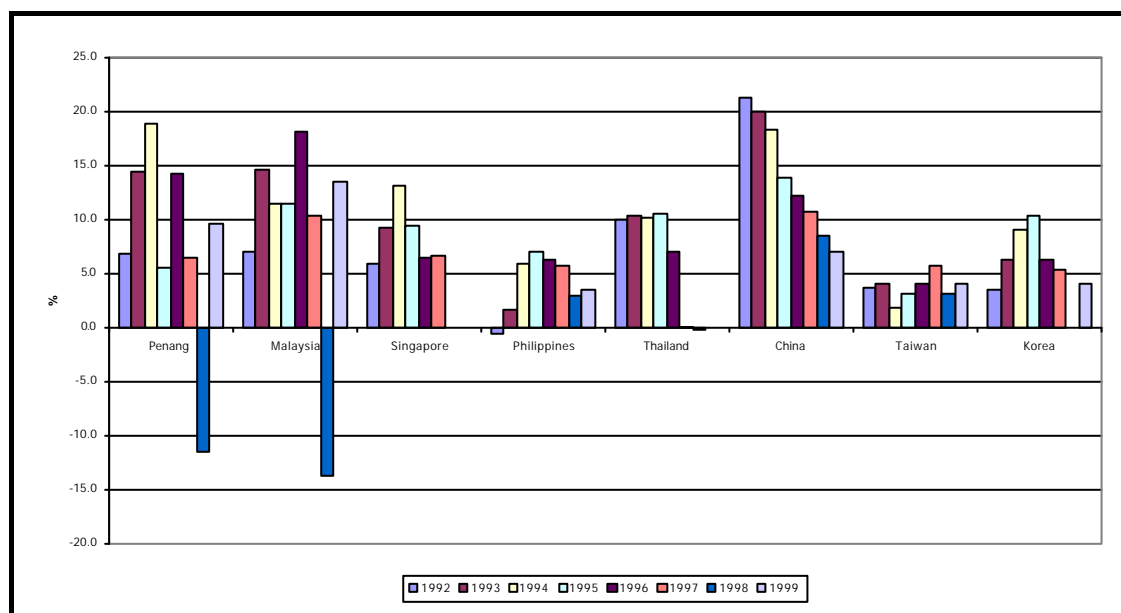
The onset of the Asian crisis has to a certain extent affected the performance of the manufacturing sector in Penang. Value added from this sector contracted in 1998 as a consequence of the Asian crisis, but it rebounded and achieved a growth of not less than 9.6% in 1999 and is anticipated to achieve a growth of more than 13% in 2000.¹

Table 4: Manufacturing Value Added Growth Rates

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Penang	6.9	14.5	18.8	5.6	14.2	6.5	-11.5	9.6	13.6
Malaysia	7.0	14.6	11.4	11.4	18.2	10.4	-13.7	13.5	-
Singapore	5.8	9.3	13.2	9.5	6.5	6.6	-	-	-
Philippines	-0.6	1.6	5.8	7.0	6.3	5.7	3.0	3.5	-
Thailand	9.9	10.4	10.2	10.5	7.0	-0.1	-0.3	-	-
China	21.2	19.9	18.4	13.9	12.1	10.8	8.5	7.0	-
Taiwan	3.6	4.0	1.8	3.1	4.0	5.7	3.1	4.1	-
Korea	3.4	6.2	9.0	10.3	6.2	5.4	-2.5	4.0	-

Source: Derived from Asian Development Outlook 1998, Bank Negara Malaysia & SERI

Figure 2: Manufacturing Value Added Growth Rates of Selected Locations



Source: Derived from Asian Development Outlook 1998, BNM & SERI

Investments

Tables 5 & 6 show the FDIs and growth in FDIs at selected locations. China seems to receive more FDI than any other locations during the 1991-1997 period. All the countries except China and Thailand experienced contraction in FDI during the 1997 period. This is a result of the Asian financial/economic crisis. However, Thailand, which was the first country that was affected by this crisis, experienced growth in FDI. This could mainly be due to the aggressive investment promotion by the Board of Investment (BOI) of Thailand. Furthermore, of all the countries, China seems to be the only location that experienced growth in FDI throughout

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Table 5: FDI at Selected Locations (USD Million)

	1991	1992	1993	1994	1995	1996	1997
Penang	388	240	104	263	256	775	110
Malaysia	3998	5183	5006	4342	4132	5300	5110
Singapore	4887	2204	4686	5480	6912	9440	8630
Philippines	544	228	1238	1591	1478	1408	1250
Thailand	2014	2114	1730	1322	2003	2426	3750
China	4366	11156	27515	33787	35849	42300	44240
Taiwan	1271	879	917	1375	1559	1402	-
Korea	1180	727	588	809	1776	2308	-

Source: Asian Development Outlook 1998; 1999 World Competitiveness Yearbook for 1997 data, and Penang data derived from MIDA

Table 6: FDI Growth at Selected Locations (%)

	1991/92	1992/93	1993/94	1994/95	1996/95	1996/97
Penang	-38.2	-56.8	153.7	-2.6	202.4	-85.8
Malaysia	29.6	-3.4	-13.3	-4.8	28.3	-3.6
Singapore	-54.9	112.6	16.9	26.1	36.6	-8.6
Philippines	-58.1	443.0	28.5	-7.1	-4.7	-11.2
Thailand	5.0	-18.2	-23.6	51.5	21.1	54.6
China	155.5	146.6	22.8	6.1	18.0	4.6
Taiwan	-30.8	4.3	49.9	13.4	-10.1	-
Korea	-38.4	-19.1	37.6	119.5	30.0	-

Source: Derived from Asian Development Outlook 1998; 1999 World Competitiveness Yearbook for 1997 data, and MIDA for Penang data

the six-year period, although at different quantum.

FDI inflow to Penang is cyclical. Penang experienced contraction in FDI in 1992 and 1993 but registered a significant growth of 153.7% in FDI in 1994. The State suffered a slight contraction in FDI in 1995 but regained growth in 1996, by 202.4%. However, in 1997, Penang was greatly impacted in terms of inflow of FDI because of the Asian financial/economic crisis. By 1998, FDI to Penang totalled US\$ 335.4 million (or growth of 204.7%) and in 1999, FDI to Penang reached US\$ 1,209.7 million (or growth of 260.6%).

Table 7: Ranking in Terms of Investments

States	Ranking		
	1997	1998	1999
Penang	7	4	1
Melaka	10	9	2
Selangor	2	3	3
Johor	3	2	4
Terengganu	5	1	5
Perak	9	11	6
Kedah	1	10	7
Negeri Sembilan	8	7	8
Pahang	4	5	9
Wilayah Persekutuan	13	12	10
Sarawak	11	6	11
Sabah	6	8	12
Kelantan	12	13	13
Perlis	14	14	14

Source: Derived from MIDA

As for Penang in comparison with the other states in Malaysia, the state's ranking in terms of capital investment improved from its 7th position in 1997 to 4th in 1998 (Table 7). Investment in absolute terms has actually increased in 1998 despite the economic crisis. For 1999, Penang's position moved to the top and registered RM 4.76 billion in terms of investments. This indicates the confidence of the industrial community in expanding and continuing their investments in Penang. It also means that the dominant industrial sector in Penang, which is basically the export-oriented industries² are not affected by the Asian crisis compared to the other in-

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dustries. It is also noted that the main factors influencing companies' decision to locate in Penang comprise political stability, availability of labour, availability of supporting & ancillary industries and availability of high quality infrastructure.³

The four top states in 1998 are basically industrialised states, relatively strong in the export-oriented industries.

Table 8 shows that investments in Penang increased by 84.0% in 1998 and increased further by another 78.6% in 1999. Of the RM 4.76 billion investments by 93 projects in 1999, reinvestments accounted for 95.4% of the total. This also indicates Penang's core competency in retaining the existing investors as well as to encourage them to further invest in Penang through modernisation, expansion and diversification.

Table 8: Manufacturing Investments in Penang

	1997	1998	1999
Investments (RM Million)	1,449.1	2,666.5	4,762.2
		1997-1998	1998-1999
Change (%)		84.0%	78.6%

Source: Derived from MIDA

3. COST OF DOING BUSINESS

Cost of Industrial Land/Building

Cost of industrial land is relatively cheaper in Malaysia compared to other locations like Indonesia, Philippines and even Thailand (Table 9) Likewise for the selling price of ready-built factories. The rent for ready-built factories in Malaysia, Philippines and Thailand are about the same, but in Indonesia, it is exceptionally low. However, construction costs of factory buildings could be higher in Malaysia due to higher labour charges as well as high cost of building materials, which are mainly imported.

Table 9: Cost of Industrial Land/Building (depending on location)

	Malaysia	Penang	Indonesia	Philippines	Thailand
Cost of industrial land	RM 4.95 – RM 289.70	RM 131.31 – RM 226.02	RM 372.00	RM 861.00 – RM 1,340.00	RM 28.00 – RM 254.00
Selling price of ready-built factory (RM per s.q.m. floor area)	RM 861.00 – RM 4,304.00	RM 2,029.40	RM 476.0 – RM 1,429.00	-	RM 1,420.00
Rental of ready-built factory (RM per month per s.q.m. of floor area)	RM 5.38 – RM 21.52	RM 14.00 – RM 15.07	RM 8.60	RM 20.70	RM 20.28
Construction costs of factory building (per s.q.m.)	RM 430.00 – RM 1,184.00	-	RM 381.00 – RM 714.00	RM 957.00 – RM 1,053.00	RM 406.00 – RM 710.00

Source: EPU, JPM & Penang data derived from PDC

Electricity Rates

Table 10 shows the rates of electricity in Malaysia, Indonesia, Philippines and Thailand. Indonesia has the lowest rates among the 4 countries. Although Thailand's rates are relatively cheaper than Malaysia's and Philippines', Thailand imposes another charge, which is the 'demand charge' that ranges from RM 16.11 to RM 28.91 per kW. As such, its rate could either work out to be higher or lower than that of Malaysia's. On the other hand, Singapore charges a relatively cheaper rate (14.6 – 18.2 sen/kWh) than Malaysia.

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Table 10: Electricity Rates (for Industrial Units)

	Malaysia	Indonesia	Philippines	Thailand
Electricity tariff – sen/kWh	19.8 – 25.8	5.5 – 6.5	30 -- 42	7 – 30

Source: EPU, JPM

Telecommunication

Table 11 shows the telecommunication rates of Malaysia, Indonesia, Philippines and Thailand. Malaysia does not impose installation charges, while the installation charge in Thailand is the highest among the rest of the three countries. The monthly rental rate is lowest in Indonesia followed by Malaysia. Although the rental rate is relatively higher in Philippines, it is a flat rate with an additional 10% VAT and includes free local calls. On the other hand, Singapore, which is considered a high cost centre compared to the rest of the 4 countries does not impose any installation charge and the monthly rental is only RM 28, much cheaper compared to Thailand and Philippines.

Table 11: Telecommunication Charges

	Malaysia	Indonesia	Philippines	Thailand
Installation	Nil	RM 381	RM 566.20	RM 600.00
Rental/Month	RM 20 – RM 25	RM 14.80	RM 106.40 + 10% VAT	RM 100 – RM 2750.00

Source: EPU, JPM

Water Rates

The water rates for industrial use in the four countries as well as in Penang are shown in Table 12. Water rates in Penang is still relatively cheaper than in many locations. The rates may not be cheaper than in Philippines but it is the cheapest in Malaysia. Furthermore, the water rates in Penang are cheaper than in Thailand and Indonesia.

Table 12: Water Rates

	Penang	Malaysia	Indonesia	Philippines	Thailand
Rates RM/m ³	RM 0.52 – RM 0.90	RM 0.70 – RM 1.80	RM 1.74	RM 0.38 – RM 0.53	RM 0.66 – RM 1.85

Source: EPU, JPM & PDC Investment Kit

Sewerage & Waste Treatment Rates

Indonesia possibly has one of the lowest sewerage and waste treatment rates in the world. While most of the countries charge flat rates for sewerage, Malaysia's computation system is based on the number of employees in the company. Companies that employ more employees will have to pay higher sewerage rates.

As for waste treatment, Malaysia, Thailand and even Singapore charge according to the type of wastes, that is according to the level of hazard. Rates in Singapore vary from RM 105 to RM 762. From Table 13, the rates in Malaysia appear exorbitant for waste treatment compared to its neighbouring countries, which are also its competitors in industrial development.

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Table 13: Sewerage & Waste Treatment Rates

	Malaysia	Indonesia	Philippines	Thailand
Sewerage (RM/tonne)	RM 2 – RM 2.50 per employee/month	RM 13.10	50% of the water charge for the month	RM 254/unit
Waste Treatment (RM/tonne)	RM 630 – RM 3600	RM 1.90	50% of the water charge for the month	RM 203 – RM 406

Source: EPU, JPM

Note: Does not include transportation charges

Haulage Rates

Haulage charges in Malaysia, Philippines and Thailand are based on tonnage and distance. However, Indonesia and Singapore impose flat rates for haulage irrespective of tonnage and distance.

Table 14 shows the haulage rates in Malaysia, Indonesia, Philippines and Thailand. Thailand has the most competitive rates compared to the four countries, while rates in Indonesia is the highest. The haulage rate is even higher than in Singapore, i.e. RM 314 – RM 358.

Table 14: Haulage Rates (TEU)

	Malaysia	Indonesia	Philippines	Thailand
TEU	RM 0.06 – RM 0.20 per tonne/km	RM 570	RM 4.56 per tonne/km	RM 0.059 - RM 0.062 per tonne/km

Source: EPU, JPM

Labour Cost

Table 15 shows the annual wage of selected countries as well as the CAGR of wages in these countries for the period 1985-90 and 1990-94. Penang has a significantly lower wage base in 1994 compared to the NIEs. However, its base was higher than its competitors in this region, namely Philippines and China, which have relatively high education indices and literacy rates.⁴

While the NIEs experienced high wage increase during the 1985-90 and 1990-94 periods, the developing nations were experiencing lower growth. However, Malaysia recorded an 8.9% growth in wages during the 1990-94 period while registering a negative growth for the 5 years prior to that. On the other hand, Penang registered a double-digit growth of 10.2% during the 1990-1994 period, much higher than the growth (2.9%) during the 1987-1990 period. Growth in wages instead slowed down for China during the 1990-94 period compared to the 1985-90 period.

The tight labour market and increased demand for higher skills in the mid-1990s prior to the onset of the Asian economic crisis have resulted in significant increases in wages in Malaysia, particularly Penang, which was experiencing full employment.

The average wage increase in the manufacturing sector in Malaysia in 1996 was 10.6% and increased further to 15.0% in 1997 (Table 16). Although data for Penang is not available, wages in the manufacturing sector in Penang is rather high, second to Klang Valley. As such, it can be assumed that wages in Penang's manufacturing sector recorded a double-digit growth during the period when the State experienced full employment.

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Table 15: Annual Wages in Manufacturing in Selected Countries (US\$)

	Annual Wage 1994	CAGR (%) 1985-1990	CAGR (%) 1990-1994
Singapore	17,794	8.3	13.2
Hong Kong	15,160	13.8	13.4
Taiwan	14,469	20.7	10.2
S. Korea	14,295	21.9	11.2
Malaysia	4,555	-0.8	8.9
Penang	4,891	2.9 *	10.2
Thailand	4,917	8.0	8.7
Philippines	2,857	7.5	12.2
China	340	2.1	1.8

Source: Derived from Sanjaya Lall 1998, "Thailand's Manufacturing Competitiveness: An Overview"; and Penang data derived from DOS, Survey of the Manufacturing Industries, v.y..

Table 16: Average Wage Increase In Malaysian Manufacturing Sector

	1996	1997	1998*
Average wage increase (%)	10.6	15.0	8.4

Source: MOF, Economic Report, 1997/98 & 1998/99

It is apparent that wages increased as a result of rising demand for higher skills. However, skills intensity in Penang is relatively low and dependency on labour is still prominent among the industries, while research & development capacity is lacking. These elements could pose as a disadvantage for Penang in comparison to the other emerging industrialising countries in the region, particularly Philippines, which has both high education index and literacy rate.

Table 17: Monthly Wages of Production Workers

	Malaysia	Indonesia	Philippines	Thailand
Production Workers (RM/month)	RM 420 – RM 1169	RM 120	RM 837 – RM 1547	RM 396 – RM 493

Source: EPU, JPM

Table 17 compares the wages of production workers in Malaysia, Indonesia, Philippines and Thailand. The wages of production workers in Indonesia and Thailand are lower than in Malaysia. However, the wages for production workers in Philippines seem to be higher than in the other 3 countries. While Malaysia, Indonesia and Philippines do not have a minimum wage for their production workers, Thailand imposes a minimum wage policy.

4. CAPABILITIES

Education

Table 18 shows the education index of selected industrial locations. In this aspect, Penang and Malaysia as a whole are at a disadvantage compared to some other locations. Although Malaysia is generally considered as more economically developed than Thailand and Philippines, the education indices of these two locations are higher than Malaysia as a whole. On the other hand, estimates show that the education index in Penang is higher than that of Thailand, which implies that there is high potential for developing Penang's labour force.

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The literacy rate of 93.1% in Penang also indicates that the labour force is relatively trainable. Skills training and upgrading is rather prominent in Penang today with the expansion of the Penang Skills Development Centre (PSDC)⁵ as well as the establishment of private colleges that provide tertiary education to Penang's populace as well as foreign students who reside in Penang.

Despite the efforts of continuing education as well as skill upgrading and enhancement, the enrolment in the rural areas, especially among certain ethnic groups is still relatively low. Efforts are needed to encourage the rural population to enrol their children in the formal education system. Furthermore, to reach a developed nation status like South Korea, there is room for improvement, especially in education and skills development aspects.

Table 18: Education Index and Literacy Rate

	Education Index	Literacy Rate
Penang	0.88(e)	93.1
Malaysia	0.76	83.5
Singapore	0.83	91.1
Philippines	0.90	94.6
Thailand	0.81	93.8
China	0.76	81.5
Korea	0.93	98.0

Source: UNDP, Human Development Report 1998

Penang – (e) Education index is estimated using DOS Census (Estimates of gross enrolment is calculated from data on school attendance & population of that particular age group) & 7MP, MTR 7MP

Education index is measured by a combination of adult literacy (two-thirds of weight) and the combined first-, second- and third level gross enrolment ratio (one-third of weight).

Technological Capabilities

Presently there is a lack of data on R&D in Penang and in Malaysia as a whole. Table 19 compares the ratio of research scientists & engineers as well as the ratio of research expenses. Malaysia's one research scientist & engineer for every 10,000 labour force is way below those of the newly industrialised economies⁶, which comprise South Korea, Taiwan and Singapore, even though their data is more recent.

Table 19: R&D Capacity

Country/Location	RSE/10,000 Labour Force	GERD/GDP ratio (%)
Japan (1996)	105	3.0
USA (1993)	75	2.6 (1997)
Switzerland (1996)	52	2.8
South Korea (1996)	62	2.8
Taiwan (1996)	58	1.9
Singapore (1997)	60	1.5
Korea (1995)	26	2.8
Thailand (1991)	2	0.2
Philippines (1984)	1	0.1
China (1993)	5	0.6
Malaysia (1992)	1	0.4

Source: Ministry of Trade & Industry, Singapore (1998), *Committee on Singapore's Competitiveness*
Derived from Sanjaya Lall (1998), "Thailand's Manufacturing Competitiveness: An Overview"

Note: GERD – Gross expenditure on R&D, RSE – Research Scientists & Engineers

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However, on a more positive note, Penang is more industrialised than many of the other states in Malaysia. The skills intensity⁷ of Penang's manufacturing labour force has actually risen significantly over the past decade. Table 20 shows the rising skills intensity in Penang's manufacturing labour force.

Table 20: Skills Intensity of Penang's Manufacturing Labour Force

	1980	1990	1998 (June)
Skills intensity	0.13	0.15	0.23

Source: Derived from PDC Survey of the Manufacturing Industries, various years.
Skills intensity is calculated based on the ratio of management & technical staff over the total employed.

Similarly, accompanying the rising skills intensity is the declining dependency on labour-intensity. Table 21 shows that the percentage of production workers over the total manufacturing workforce has declined significantly over the same period. However, it should be noted that production workers still account for the majority of the manufacturing workforce in Penang and to develop towards a higher technology platform, skills intensity of the present workforce needs to be enhanced significantly.

Table 21: Production Workers as a Percentage of Total Manufacturing Workforce in Penang

	1990	1995	1998 (June)
Production Workers/Total Manufacturing Workforce (%)	74.3	68.9	67.1

Source: Derived from PDC Survey of the Manufacturing Industries, various years

Critical skills area such as design, software engineering, logistics and marketing are still lacking and efforts are required to enhance the Penang's manufacturing workforce in these skills areas if Penang aspires to become the centre of manufacturing excellence in the region.

5. IMPLICATIONS

The Penang economy in general depends heavily on the manufacturing industry, which is predominantly the electronics industry. As the electronics industry is volatile hinging on the vicissitudes of the global markets, Penang should determine if its dependency on the electronics industry is sustainable or only temporary.

Although it is irrefutable to claim that Penang has been a successful centre for manufacturing, particularly the electronics industry for the past 3 decades, Penang's strength is in assembly and test operations. Such operations are normally labour intensive except for some innovative industries that have begun to automate their processes. As such dependency on only one aspect of the value chain, namely assembly and test is rather risky.

To develop along the value chain to include higher value added services such as design, R&D, distribution, logistics as well as marketing would help Penang in the long term, as labour is no longer cheap. Furthermore, the emerging industrialising countries that are competing for FDIs with Penang have lower wage rates as well as equally qualified and skilled labour force.

Penang's ranking in terms of investments may improve from 1997 to 1999. However, this does not mean that Penang is capable of attracting more new investments, judging from the fact that reinvestments accounted for more than 95% of the investments received in 1999. Furthermore, as Penang is rapidly running out of resources, such as land and human resources, it is the responsibility of the State Government as well as the populace of Penang to retain the existing investments are well as to encourage them to keep on reinvesting to upgrade their current facilities in Penang.

Industrial land prices in Penang could easily be one of the highest in Malaysia, mainly due to its limited

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land resources. However, it is still cheaper compared with that in Philippines and Indonesia. While the other utilities charges are the same throughout Malaysia, Penang could still boast of its relatively cheaper water supply. Water rates in Penang are also cheaper compared with Indonesia and Thailand. However, this has never been considered a determining factor for the industries to locate in Penang, even though some of them are rather water intensive. Waste treatment and disposal is another area that adds to the cost of operation because of lack of facilities and service providers. However, more importantly, most of the industrial investors actually look for efficient supply of utilities and infrastructure rather than the cost itself.

In terms of education and skills training, Penang and Malaysia in general may be better off than some countries, however, it does not mean that the government and populace of Penang, Malaysia can be complacent with their achievements thus far. In order to become competitive globally, skills upgrading is pertinent. Skills upgrading and enhancement is a means towards the adoption, absorption and application of technologies, which are being rapidly upgraded.

There is also a lack of technological capability among the industrial entrepreneurs and workers in Penang and Malaysia. There may be many engineers employed in industrial companies in Penang but these engineers still do not meet the criteria of R&D engineers. Training in the areas of design and R&D is still at the infant stage and many industrialists still perceive the local environment not conducive enough to carry out R&D activities.

Furthermore, local universities and private colleges still fail to comprehend the requirements of the industries and thus, are unsuccessful in facilitating the industries in meeting their human resources needs. Even parents are more receptive to their children becoming white-collar workers and thus, discouraging their children to acquire skills that meet the demands of the industries. This resulted in more students taking up arts related courses rather than technical courses. An eventual result is a mismatch between the supply of and the demand for human resources.

It should be noted that dependency on comparative advantages has evolved to competitiveness and to be competitive, a country can no longer rely on its abundance cheap labour, but instead, should depend on its skills-, knowledge- and technology-capabilities to create a productivity-driven society. As such, there is also an urgent need for the government to prioritise the development of human resources and higher value added services in order to develop and retain Penang's core competency in the manufacturing sector, in particular the electronics industry.

Endnotes:

1. SERI's estimates.
2. Which mainly comprises the electronics industry.
3. ILO, Study on Women's Employment in EPZs/LMWs
4. Particularly China.
5. PSDC was established in 1989.
6. Newly industrialised countries (NIEs) comprise South Korea, Taiwan and Singapore.
7. Based on the ratio of management & technical staff over the total employed.

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